Amendments to the Claims:

1. (previously amended) An optical communication system comprising an external cavity laser that comprises:

a gain medium comprising an active region, a beam expanding region, a first surface having a reflective face and a second surface having an antireflective layer;

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an optical waveguide located adjacent the gain medium such that at least a portion of the electromagnetic energy generated by the active region passes through the beam expanding region and through the antireflective layer into the optical waveguide;

a Bragg grating integral with or coupled to the optical waveguide,

wherein the gain medium and the optical waveguide exhibit a coupling efficiency which even without the presence of coupling optics located between the gain medium and the optical waveguide is great enough that during laser operation, substantially all optical resonance that occurs is resonance of the cavity defined between said reflective face and said grating; and

wherein the laser is configured to provide multimode output of at least two modes within the grating bandwidth.

2. (original) The system of claim 1, wherein the coupling efficiency is at least 40% with or without the presence of coupling optics located between the gain medium and the optical waveguide.

3. (previously amended) The system of claim 1, wherein the cavity has a length of less than 1 cm.

4. (original) The system of claim 1, wherein the length of the system is less than 100 km.

5. (original) The system of claim 1, wherein the laser is operated by direct modulation.

6. (original) The system of claim 1, wherein the bit error rate of the system is less than 10^{-9}.

7. (original) The system of claim 6, wherein the bit error rate of the system is less than 10^{-12}.

8. (original) The system of claim 1, wherein the laser is operated at 2.5 GHz or greater.

9. (original) The system of claim 1, wherein the laser is operated in the absence of a temperature-compensating apparatus.

10. (original) The system of claim 1, wherein the gain medium and optical waveguide are coupled in the absence of coupling optics.

11. (previously amended) An optical communication system comprising an external cavity laser that comprises:

a gain medium comprising an active region, a beam expanding region, a first surface having a reflective face and a second surface having an antireflective layer;

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an optical waveguide located adjacent the gain medium such that at least a portion of the electromagnetic energy generated by the active region passes through the beam expanding region and through the antireflective layer into the optical waveguide;

a Bragg grating integral with or coupled to the optical waveguide,

wherein the gain medium and the optical waveguide exhibit a coupling efficiency which even without the presence of coupling optics located between the gain medium and the optical waveguide is great enough that during laser operation, substantially all optical resonance that occurs is resonance of the cavity defined between said reflective face and said grating; and

wherein the laser is configured to provide multimode output of at least two modes within the grating bandwidth,

wherein the laser is operated by direct modulation,

wherein the laser is operated in the absence of a temperature-compensating apparatus,

wherein the gain medium comprises a cavity less than 1 cm in length, and

wherein the length of the system is less than 100 km.

16. (previously amended) The system of claim 1, wherein the coupling efficiency between the gain medium and the optical waveguide is at least 40%.

17. (previously presented) The system of claim 1, wherein the optical communications system comprises a WDM or DWDM system.

18. (previously presented) The system of claim 11, wherein the coupling efficiency between the gain medium and the optical waveguide is at least 40%.

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19. (previously presented) The system of claim 11, wherein the optical communications system is a WDM or DWDM system.

20. (previously presented) A method to achieve high data rate modulated laser transmissions in an optical network by:

providing an optical laser which includes a gain medium having a reflective face, and further includes an external cavity effectively terminated by a grating having a bandwidth;

providing an optical fiber;

operating the optical laser such that laser radiation is produced in at least two modes within the grating bandwidth;

through the use of a light-expanding region and an antireflective (AR) layer, coupling light between the gain medium and the external cavity such that

substantially all optical resonance that occurs is resonance of the cavity defined between said reflective face and said grating;

applying a modulation signal to the optical laser, thereby to produce modulated light; and

launching the modulated light into the optical fiber.

21. (previously presented) A multimode laser, comprising:

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a gain medium having a reflective face, a beam-expanding region, and an antireflective (AR) layer;

an optical waveguide located adjacent the gain medium such that at least a portion of light output from the gain region passes through the beam-expanding region and through the AR layer into the optical waveguide; and

a grating defined in the optical waveguide, said grating having a bandwidth;

wherein the gain medium and the optical waveguide exhibit a coupling efficiency which, even without the presence of coupling optics located between the gain medium and the optical waveguide, is great enough that during laser operation, substantially all optical resonance that occurs is resonance of the cavity defined between said reflective face and said grating; and

wherein the laser is configured to provide multimode output of at least two modes within the grating bandwidth.

22. (previously presented) The multimode laser of claim 17, wherein the light output from the gain region is butt-coupled from the AR layer to a cleaved end of said optical waveguide.

23. (previously presented) The multimode laser of claim 17, wherein the light output from the gain region is modulated by direct modulation.

24. (new) A method to reduce noise in an optical communication system by distributing optical power between modes comprising the steps of:

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providing an optical transmission path;

providing an external cavity fiber grating laser optically coupled to the transmission path; and

causing the laser to lase simultaneously at two or more modes to partition the optical power over the two or more modes such that as the grating wavelength changes there is a gradual shift in the distribution of the optical power between the two or more modes.

25. (new) The method of claim 24 wherein providing an external cavity fiber grating laser comprises providing an external cavity fiber Bragg grating laser.

26. (new) The method of claim 24 wherein providing an optical transmission path comprises providing a single mode or multimode optical transmission path.

27. (new) A method to emit two or more co-existing modes in an optical communication system to reduce noise caused by mode hopping comprising the steps of:

providing an external cavity grating laser;

causing the laser to lase simultaneously in two or more modes such the net transmitted optical power is distributed amongst the two or more modes; and

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modulating the laser to transmit information by the two or more modes to reduce communication system noise caused by mode hopping.

28. (new) The method of claim 27 wherein providing an external cavity grating laser comprises providing an external cavity fiber Bragg grating laser.

29. (new) The method of claim 27 wherein providing an optical transmission path comprises providing a single mode or multimode optical transmission path.